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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/540,487

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Takayuki Abe

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT

PAPER NUMBER

1795

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/540,487	<b>Applicant(s)</b> ABE ET AL.	
	<b>Examiner</b> Rodney G. McDonald	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 20-22, 29 and 30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 20-22, 29 and 30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 18, 2009 has been entered.

### ***Allowable Subject Matter***

The indicated allowability of claims is withdrawn in view of the reference(s) to Masaharu et al. (Japan 2001-207261). Rejections based on the newly cited reference(s) follow.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshima (U.S. Pat. 4,940,523) in view of Masaharu et al. (Japan 2001-207261) and Kume et al. (U.S. Pat. 6,024,915).

Regarding claim 1, Takeshima teach a barrel sputtering device comprising a vacuum container for containing fine particles. (See Abstract; Column 5 lines 55-66) A rotating mechanism for rotating the vacuum container about a rotating axis which is substantially perpendicular to the cross section. (Column 5 lines 1-5) A sputtering target arranged in the vacuum chamber. (Column 5 lines 6-13) Sputtering is performed while rolling the fine particles in the vacuum container by rotating the vacuum container using the rotating mechanism so that the surface of the fine particle is coated. (See Abstract; Column 5 lines 54-68)

The differences between Takeshima and the present claims is that the barrel having a polygonal internal shape on a cross section substantially parallel with a gravitational direction is not discussed (Claim 1), the polygonal internal shaped configured to enable the fine particles to be rolled and stirred during rotation of the vacuum container is not discussed (Claim 1) and the particles being coated with ultra-fine particles having a grain diameter smaller than the fine particle is not discussed (Claim 1).

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Regarding the barrel having a polygonal internal shape on a cross section substantially parallel with a gravitational direction (Claim 1), Masaharu et al. teach utilizing a barrel that has a polygonal internal shape on a cross section parallel with gravitational direction. The parts are rolled and stirred in the barrel for more uniform coating. (Paragraph 0018-0019)

Regarding the polygonal internal shaped configured to enable the fine particles to be rolled and stirred during rotation of the vacuum container (Claim 1), Masaharu et al. teach utilizing a barrel that has a polygonal internal shape on a cross section parallel with gravitational direction. The parts are rolled and stirred in the barrel for more uniform coating. (Paragraph 0018-0019)

The motivation for utilizing the features of Masaharu et al. is that it allows for improving agitation of the particles. (See Paragraph 0019)

Regarding the particles being coated with ultra-fine particles having a grain diameter smaller than the fine particle (Claim 1), Kume et al. teach the particles being coated with ultra-fine particles having a grain diameter smaller than the fine particles by sputtering. (Abstract; Column 14 lines 5-12; Column 14 lines 29-37; Column 16 lines 29-40; Column 35 lines 21-40)

The motivation for utilizing the features of Kume et al. is that it allows for coating particles with coat forming substances on a single particle basis. (Column 5 lines 57-60)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Takeshima with the features of Geodicke

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et al. and Kume et al. because it allows for filling and emptying a drum during rotation and allows for coating particles with coat forming substances on a single particle basis.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshima in view of Masaharu et al. and Kume et al. as applied to claim 1 above, and further in view of Kobayashi et al. (Japan 2000-109969).

The difference not yet discussed is vibrating the vessel carrying the particles.  
(Claim 2)

Regarding claim 2, Kobayashi et al. teach vibrating the vessel carrying the particles. (See Abstract)

The motivation for utilizing the features of Kobayashi et al. is that it allows to form uniform coatings. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Kobayashi et al. because it allows for forming uniform coatings.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshima in view of Masaharu et al. and Kume et al. and further in view of Kobayashi et al. as applied to claims 1 and 2 above, and further in view of Burger et al. (U.S. Pat. 6,220,203).

The difference not yet discussed is the use of a heater for heating the fine particles contained in the vacuum container. (Claim 20)

Regarding claim 20, Burger et al. teach a heater 29 for heating particles in a rotating drum. (Column 3 lines 20-31)

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The motivation for utilizing a heating device is that it allows for heating the particles to be coated. (Column 3 lines 20-31)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Burger et al. because it allows for heating the particles to be coated.

Claims 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshima in view of Masaharu et al. and Kume et al. as applied to claim 1 above, and further in view of Burger et al. (U.S. Pat. 6,220,203).

The difference not yet discussed is the use of a heater for heating the fine particles contained in the vacuum container. (Claim 3)

Regarding claim 3, Burger et al. teach a heater 29 for heating particles in a rotating drum. (Column 3 lines 20-31)

The motivation for utilizing a heating device is that it allows for heating the particles to be coated. (Column 3 lines 20-31)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Burger et al. because it allows for heating the particles to be coated.

Claim 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshima in view of Masaharu et al. and Kume et al. and further in view of Kobayashi et al. as applied to claims 1 and 2 above, and further in view of Makowiecki et al. (U.S. Pat. 6,149,785).

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The differences not yet discussed are a rod-like member contained in the vacuum container, wherein the rod like member vibrates the fine particles so as to promote stirring and rolling the fine particles while the vacuum container is being rotated (Claim 21).

Regarding claim 21, Makowiecki et al. teach a rod-like member 119 with a screen attached in the container to promote stirring and rolling of the fine particles. Makowiecki et al. teach vibrating the screens and thus the rod 119 would be vibrated as indicated by arrows 121. (Column 9 lines 3-9; Column 8 lines 36-54)

The motivation for utilizing the features of Makowiecki et al. is that it allows for breaking up agglomerations and sticking. (Column 9 lines 5-9)

Therefore, it would have been obvious to one of ordinary skill in the art the time the invention was made to have utilized the features of Makowiecki et al. because it allows for breaking up agglomerations and sticking and for providing particles with a uniform and adherent coating.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshima in view of Masaharu et al. and Kume et al. and further in view of Burger et al. as applied to claims 1 and 3 above, and further in view of Makowiecki et al. (U.S. Pat. 6,149,785).

The differences not yet discussed are a rod-like member contained in the vacuum container, wherein the rod like member vibrates the fine particles so as to promote stirring and rolling the fine particles while the vacuum container is being rotated (Claim 22).



Regarding claim 22, Makowiecki et al. teach a rod-like member 119 with a screen attached in the container to promote stirring and rolling of the fine particles. Makowiecki et al. teach vibrating the screens and thus the rod 119 would be vibrated as indicated by arrows 121. (Column 9 lines 3-9; Column 8 lines 36-54)

The motivation for utilizing the features of Makowiecki et al. is that it allows for breaking up agglomerations and sticking. (Column 9 lines 5-9)

Therefore, it would have been obvious to one of ordinary skill in the art the time the invention was made to have utilized the features of Makowiecki et al. because it allows for breaking up agglomerations and sticking and for providing particles with a uniform and adherent coating.

Claims 4, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeshima in view of Masaharu et al. and Kume et al. as applied to claim 1 above, and further in view of Makowiecki et al. (U.S. Pat. 6,149,785).

The differences not yet discussed are a rod-like member contained in the vacuum container, wherein the rod like member vibrates the fine particles so as to promote stirring and rolling the fine particles while the vacuum container is being rotated (Claim 4), the vacuum container having a hexagonal internal shape when viewed in cross section and the hexagonal internal shape being configured to enable the fine particles contained therein to fall periodically by gravity when said rotating mechanism rotates said vacuum container is not discussed (Claim 29) and the vacuum container being configured with the polygonal internal shape in such a manner that, upon rotation

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of the vacuum container, the fine particles contained therein fall periodically by gravity is not discussed (Claim 30).

Regarding claim 4, Makowiecki et al. teach a rod-like member 119 with a screen attached in the container to promote stirring and rolling of the fine particles. Makowiecki et al. teach vibrating the screens and thus the rod 119 would be vibrated as indicated by arrows 121. (Column 9 lines 3-9; Column 8 lines 36-54)

The motivation for utilizing the features of Makowiecki et al. is that it allows for breaking up agglomerations and sticking. (Column 9 lines 5-9)

Regarding claim 29, Masaharu et al. already teach a hexagonal shaped barrel for coating particles. (See Masaharu et al. discussed above) It appears to let particles fall by gravity however Makowiecki et al. teach that particles can fall by gravity during rotation. (Column 6 lines 39-67)

Regarding claim 30, Makowiecki et al. teach that particles can fall by gravity during rotation. (Column 6 lines 39-67)

The motivation for having the particles fall by gravity is that it allows for providing particles with a uniform and adherent coating. (Column 1 lines 62-63)

Therefore, it would have been obvious to one of ordinary skill in the art the time the invention was made to have utilized the features of Makowiecki et al. because it allows for breaking up agglomerations and sticking and for providing particles with a uniform and adherent coating.

**REMARKS:**

Applicant argues that Geodicke et al. rotates their drum to fix parts to the drum. The Examiner has withdrawn Geodicke et al. and applies Masaharu et al. Masaharu et al. teach a polygonal barrel shape drum that rotates during coating. The particles do not fix to the drum but move and are agitated to achieve a more uniform coating. The polygonal barrel shape is advantageous because it increases agitation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Rodney G. McDonald/  
Primary Examiner, Art Unit 1795

Rodney G. McDonald  
Primary Examiner  
Art Unit 1795

RM  
September 22, 2009